From the clinic

Pneumomediastinum after rugby training

R. J. Haynes MB BCh and R. J. Evans FRCS
Accident and Emergency Department, Cardiff Royal Infirmary, Cardiff, UK

Forced expiration against a closed glottis (Valsalva manoeuvre), an event which occurs frequently in athletic exertion, can result in pneumomediastinum. Pneumomediastinum attributable to athletic activity, however, is reported infrequently, with only ten cases described in the literature. We believe this is the first reported case of pneumomediastinum occurring in a rugby player during training.

Case report

A previously healthy 23-year-old man attended the accident and emergency department following a 2-h rugby training session, during which he performed strenuous abdominal exercises involving ‘sit-ups’. Immediately after this he developed pain in the anterior neck, but continued training, involving tackle practice. Within 1 h he developed retrosternal pleuritic chest pain, dysphagia and dysphonia.

There was no history of other causes of pneumomediastinum.

Palpation of the neck revealed tenderness and marked crepitus from subcutaneous emphysema.

Vital signs and examination of the chest were normal.

Radiographs of the chest were normal, but soft tissue radiographs of the neck revealed gas within the retropharyngeal space and anterior to the trachea, confirming the diagnosis of pneumomediastinum (Figure 1).

The patient was admitted for observation and made a full recovery within 24 h.

Discussion

Pneumomediastinum with surgical emphysema presents with symptoms of retrosternal pleuritic chest pain (88%), dyspnoea (60%), dysphagia (40%), neck pain and dysphonia.

Clinical signs include palpable crepitus of subcutaneous emphysema and, on auscultation, crunching sounds can sometimes be heard in time with the cardiac cycle (Hamman’s sign).

Radiographs are diagnostic, with gas seen in the soft tissues of the neck. Chest radiographs show air in the mediastinum in 50% of cases.

Asthma, coughing, childbirth, vomiting, inhalational drug abuse and the Valsalva manoeuvre may all result in the generation of high intra-alveolar pressures. This in turn may lead to rupture of the walls of perivascular alveoli, with tracking of the air along the perivascular connective tissue, and subsequent dissection into the mediastinum. Once in the mediastinum, the air can track upwards between the planes of deep cervical fascia into the neck.

Other causes of pneumomediastinum and subcutaneous emphysema include traumatic or iatrogenic disruption of the alimentary mucosa, and infection of the head and neck by gas-producing organisms.

Disruption of the alimentary or respiratory mucosa may carry a poor prognosis, and ideally a contrast

Address for correspondence: Dr R. J. Haynes MB BCh, 4 Clos Y Gwadd, Hazelwood, Thornhill, Cardiff CF4 9DZ, UK
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Oesophagram should be performed where the aetiology of the pneumomediastinum is unclear.

Although uncommon, pneumomediastinum is a hazard associated with repeated exercise to the point of exhaustion, in a tired athlete, straining to reach further heights of physical achievement. We believe this to be the causal mechanism in the case described, i.e. high intra-alveolar pressures created while straining to perform 'sit-ups', and during blows to the chest, against a closed glottis, while tackling.

References

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